

FIG.1

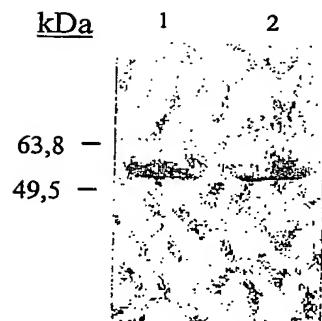


FIG.2

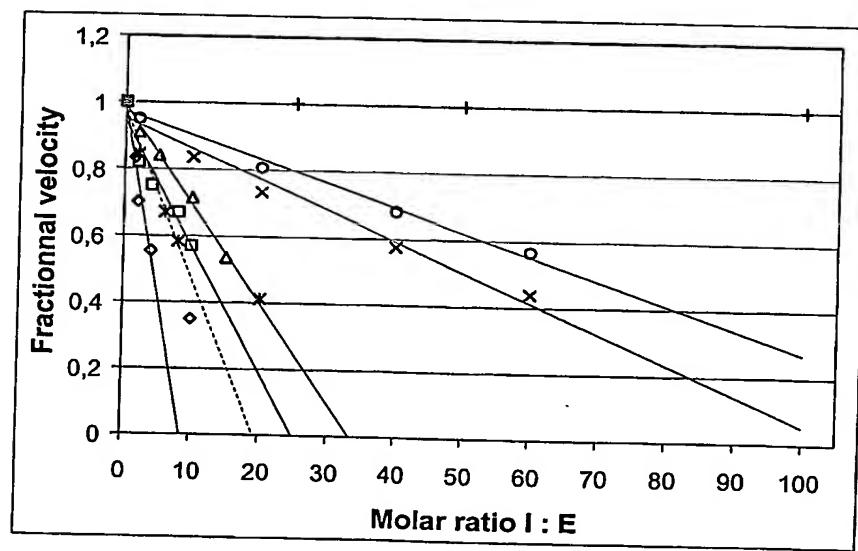


FIG. 3

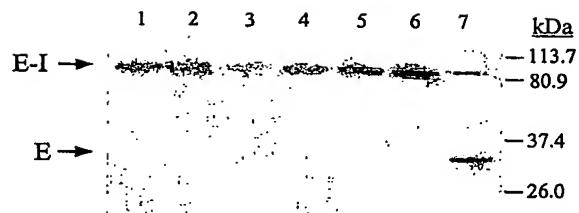
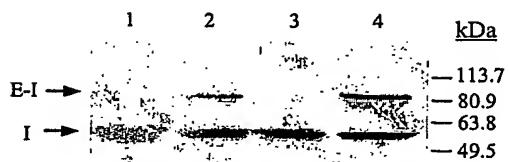
A**B**

FIG. 4

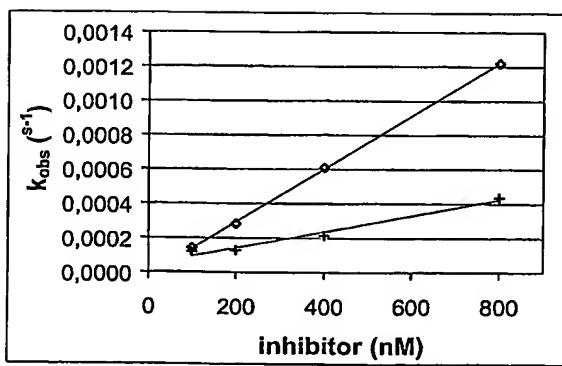
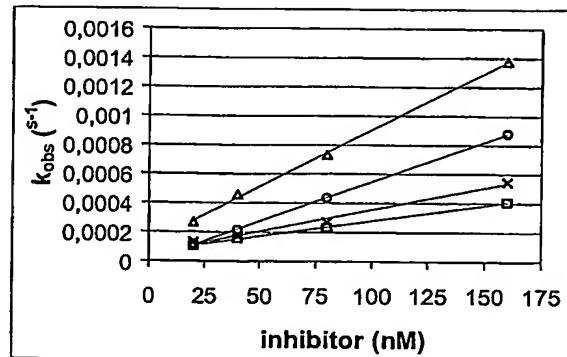
A**B**

FIG. 5

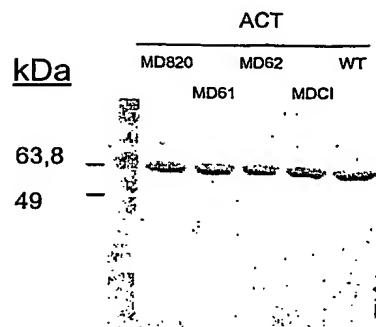
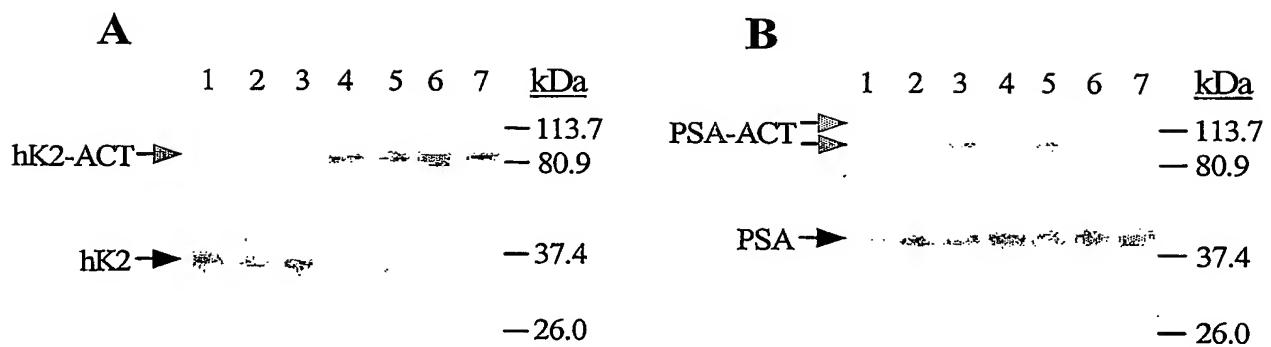


FIG. 6



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FIG. 7A

Italic : start codon ATG

Bold : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

DNA Sequence ACT variants : MD 820**SEQ ID N°1**

ATGAGAGGATCCCATCACCATCACCATCACCTAGACACCCTAACAGCCCACGTGACGAGGAGA
ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT
GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGCTCTGAAGGCCCTGATAAGAATGTCATCTTC
TCCCCACTGAGCATCTCCACCGCCTGGCCTTCCTGTCTCTGGGGCCATAATACCACCCCTGA
CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTACACAGAG
CTTCCAGCACCTCCTGCGACCCCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGGAAAT
GCCATGTTGTCAAAGAGCAACTCAGTCTGGACAGGTTACGGAGGATGCAAGAGGCTGT
ATGGCTCCGAGGCCTTGCACTGACTTTCAGGACTCAGCTGCAGCTAACAGACTCATCAACGA
CTACGTGAAGAATGGAACTAGGGGAAAATCACAGATCTGATCAAGGACCTGACTCGCAGACAA
ATGATGGTCTGGTAATTACATCTTCTTAAAGCCAAATGGGAGATGCCCTTGACCCCCAAG
ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGTAATGGTGCCCATGATGAGTTT
GCATCACCTGACTATACTTACTTCCGGGACGAGGAGCTGTCCTGCACCGTGGAGCTGAAG
TACACAGGCAATGCCAGCGCACTCTTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGGAAAG
CCATGCTGCTCCAGAGACCCCTGAAGCGGTGGAGAGACTCTCTGGAGTTCAGAGAGATAGGTGA
GCTCTACCTGCCAAAGTTCCATCTCGAGGGACTATAACCTGAACGACATACTCTCCAGCTG
GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG
CAGTCTCCCAGGTGGTCCATAAGGCTGTGCTGATGTATTGAGGAGGGCACAGAACATCTGC
TGCCACCGCGGTCAAAATCACCTCCGTTCTCGAGCAGTGGAGACGCGTACCAATTGTGCGTTTC
AACAGGCCCTCCTGATGATCATTGTCCCTACAGACACCCAGAACATCTTCTCATGAGCAAAG
TCACCAATCCCAAGCAAGCCTAA

Protein Sequence ACT variants : MD 820**SEQ ID N°2**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF
SPLSISTALAFLSLGAHNTLTEILKGLKFNLTESEAEIHQSFAQHLLRTLNQSSDELQLSMGN
AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAKKLINDYVKNGTRGKITDLDLSQT
MMVLVNYIFFKAKWEMPFDQDTHQSRFYLSKKWVMVPMMSLHHLTIPIYFRDEELSCTVVELK
YTGNASALFILPDQDKMEEVEAMLLPETLKRWRDSLEFREIGELYLPKFSISRDYNLNDILLQL
GIEEAFTSKADLSGITGARNLAWSQVVHKAVLDVFEEGTEASAATAVKITLRSRAVETRTIVRF
NRPFLMIIVPTDTQNIFFMSKVTNPQKA*

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FIG. 7B

Italic : start codon ATG

Bold : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

DNA Sequence ACT variant : MD 62**SEQ ID N°3**

ATGAGAGGATCCCATCACCATCACCATCACTCTAGACACCCTAACAGCCCCACTTGACGAGGAGA
ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT
GGACTTCGCTTCAGCCTGTACAAGCAGTTAGTCCTGAAGGCCCTGATAAGAATGTCATCTTC
TCCCCACTGAGCATCTCCACCGCCTTGGCCTCTGTCTCTGGGGGCCATAATACCACCCCTGA
CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTCAACCAGAG
CTTCCAGCACCTCCTGCGACCCCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGAAAT
GCCATGTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTACGGAGGATGCCAAGAGGCTGT
ATGGCTCCGAGGCCTTGCAC TGACTT CAGGACTCAGCTGCAGCTAAGAAGCTCATCAACGA
CTACGTGAAGAATGGAACTAGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA
ATGATGGTCCTGGTAATTACATCTTCTTAAAGCCAATGGGAGATGCCCTTGACCCCCAAG
ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGTAATGGTGCCATGATGAGTT
GCATCACCTGACTATACTTACTTCCGGGACGAGGAGCTGTCCTGCACCGTGGAGCTGAAG
TACACAGGCAATGCCAGCGCACTCTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGGAAAG
CCATGCTGCTCCAGAGACCCCTGAAGCGGTGGAGAGACTCTGGAGTTCAGAGAGATAGGTGA
GCTCTACCTGCCAAAGTTCCATCTCGAGGGACTATAACCTGAACGACATACTCTCCAGCTG
GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG
CAGTCTCCAGGTGGTCCATAAGGCTGTGCTGATGTATTGAGGAGGGCACAGAACATCTGC
TGCCACCGCGGTCAAAATCACCAGGAGGTCTATCGT**GTGGAGACCGTACCATGCGTTTC**
AACAGGCCCTCCTGATGATCATTGTCCTACAGACACCCAGAACATCTTCTCATGAGCAAAG
TCACCAATCCCAAGCAAGCCTAA

Protein Sequence ACT variant : MD 62**SEQ ID N°4**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF
SPLSISTALAFSLGAHNTTLTEIILKGLKFNLTETSEAEIHQSFBHLLRTLNQSSDELQLSMGN
AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAKKLINDYVKNGTRGKITDLIKDLDQ
MMVLVNYIFFKAKWEMPFDQDTHQSRFYLSKKWVMVPMMSLHHLTI PYFRDEELSTVVELK
YTGNASALFILPDQDKMEEVEAMLLPETLKRWRDSLEFREIGELYLPKFSISRDYNLNDILLQL
GIEEAFTSKADLSGITGARNLAVSQVVKAVLDVFEEGTEASAATAVKITRRSID**VETRTIVRF**
NRPFLMIIVPTDTQNIFFMSKVTPNPKQA*

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FIG. 7C

Italic : start codon ATG

Bold : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

DNA Sequence ACT variant : MD 83**SEQ ID N°5**

ATGAGAGGATCCCATCACCATCACCATCACTCTAGACACCCTAACAGCCCACTTGACGAGGAGA
ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT
GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGTCCTGAAGGCCCTGATAAGAATGTCATCTTC
TCCCCACTGAGCATCTCCACCGCCTTGGCCTTCTGTCTGGGGGCCATAATACCACCTGA
CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTACCAAGAG
CTTCCAGCACCTCTGCGCACCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGAAAT
GCCATGTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTCACGGAGGATGCCAAGAGGGCTGT
ATGGCTCCGAGGCCTTGCCACTGACTTTCAAGGACTCAGCTGCAGCTAAGAAGCTCATCACGA
CTACGTGAAGAATGGAACTAGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA
ATGATGGTCCTGGTAATTACATCTTAAAGCCAAATGGGAGATGCCCTTGACCCCCAAG
ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGTAATGGTGCCATGATGAGTT
GCATCACCTGACTATACTTACTTCGGGACGAGGAGCTGTCCTGCACCCTGGAGCTGAAG
TACACAGGCAATGCCAGCGCACTCTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGGAAAG
CCATGCTGCTCCCAGAGACCCCTGAAGCGGTGGAGAGACTCTGGAGTTAGAGAGATAGGTGA
GCTCTACCTGCCAAAGTTTCCATCTCGAGGGACTATAACCTGAACGACATACTCTCCAGCTG
GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG
CAGTCTCCAGGTGGTCCATAAGGCTGTGCTGATGTATTGAGGAGGGCACAGAACGATCTGC
TGCCACC CGGGTCAAAATCAGGGGAGATCTGAGTTAGTGGAGACGCGTACCATGTGCGTTTC
AACAGGCCCTTCCTGATGATCATTGCTTACAGACACCCAGAACATCTTCTCATGAGCAAAG
TCACCAATCCAAGCAAGCCTAA

Protein Sequence ACT variant : MD 83**SEQ ID N°6**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF
 SPLSISTALAFSLGAHNTTLTEILKGLKFNLTELSEAEIHQS~~F~~QHLLRTLNQSSDELQLSMGN
 AMFVKEQLSLLDRFTEDAKR~~L~~Y~~G~~SEAFATDFQDSAAKKLINDYVKNGTRGKITD~~L~~I~~K~~DLD~~S~~QT
 MMVLVNYIFFKAKWEMPFD~~P~~QDTHQS~~R~~FYLSKKWVMVP~~M~~MSLHHLTIPYFRDEEL~~S~~CTVVELK
 YTGNASALFILPDQDKMEEVEAMLLPETLKWR~~R~~DSLEFREIGELYLPKFSISRDYNLNDILLQL
 GIEEAFTSKADLSGITGARNLAVSQVVKAVLDV~~F~~E~~E~~GTEASAATAV~~K~~I~~R~~~~G~~R~~S~~ELVETRTIVRF
 NRPFLMII~~V~~P~~T~~DTQNIFFMSKV~~T~~NP~~K~~QA*

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FIG. 7D

Italic : start codon ATG

Bold : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

DNA Sequence ACT variant : MD 67**SEQ ID N°7**

ATGAGAGGATCCCATCACCATCACCTAGACACCCTAACAGCCCAC TGACGAGGGAGA
ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT
GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGTCCTGAAGGCCCTGATAAGAATGTCATCTTC
TCCCCACTGAGCATCTCCACCGCCTGGCCTTCGTCTGGGGCCATAATACCACCTGA
CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTCTGAGGCAGAAATTCAACCAGAG
CTTCCAGCACCTCCTGCGCACCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGAAAT
GCCATGTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTCACGGAGGATGCCAAGAGGCTGT
ATGGCTCCGAGGCCTTGCACTGACTTTCAGGACTCAGCTGCAGCTAACAGACTCATCAACGA
CTACGTGAAGAATGGAACTAGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA
ATGATGGTCTGGTGAATTACATCTTAAAGCCAATGGGAGATGCCCTTGACCCCCAAG
ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGTAATGGTCCCCATGATGAGTTT
GCATCACCTGACTATACCTACTTCCGGACGAGGAGCTGTCCTGCACCGTGGAGCTGAAG
TACACAGGCAATGCCAGCGACTCTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGGAAAG
CCATGCTGCTCCAGAGACCCCTGAAGCGGTGGAGAGACTCTGGAGTTCAGAGAGATAGGTGA
GCTCTACCTGCCAAAGTTCCATCTCGAGGGACTATAACCTGAACGACATACTCTCAGCTG
GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG
CAGTCTCCAGGTGGTCCATAAGGCTGTGCTGATGTATTGAGGAGGGCACAGAACATCTGC
TGCCACCGCGGTCAAAATCAAGCTTAGAACACATTAGGGAGACGCGTACCATGTCGTTTC
AACAGGCCCTCCTGATGATCATTGCTTACAGACACCCAGAACATCTTCTTATGAGCAAAG
TCACCAATCCCAAGCAAGCCTAA

Protein Sequence ACT variant: MD 67**SEQ ID N°8**

MRGSHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF
 SPLSISTALAFSLGAHNTTLTEILKGLKFNLTELSEAEIHQS~~FQHLLRTLNQSSDELQLSMGN~~
 AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAKKLINDYVKNGTRGKITDLIKDLD~~SQT~~
 MMVLVNYIFFKAKWEMPFD~~P~~QDTHQS~~R~~FYLSKKWVMVPMSLHHLTIPYFRDEEL~~S~~CTVVELK
 YTGNASALFILPDQDKMEEVEAMLLPETLKWRDRSLEFREIGELYLPKFSISRDYNLNDILLQL
 GIEEAFTSKADLSGITGARNLAVSQVVKAVLDVFEEGTEASAATAV~~KIKLRTT~~L~~VETRTIVRF~~
 NRPFLMII~~VPTDTQNI~~FFMSKVTPKQA*

FIG. 7E

Italic : start codon ATG

Bold : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

DNA Sequence ACT variant : MD 61**SEQ ID N°9**

ATGAGAGGATCCCATCACCATCACCATCACTCTAGACACCCTAACAGCCCACTTGACGAGGAGA
 ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT
 GGACTTCGCTTCAGCCTGTACAAGCAGTTAGTCTGAAGGCCCTGATAAGAATGTCATCTTC
 TCCCCACTGAGCATCTCCACCGCCTGGCCTCCTGTCTGGGGCCATAATACCAACCTGA
 CAGAGATTCTCAAAGGCCTCAAGTTAACCTCACGGAGACTTCTGAGGCAGAAATTCAACCAGAG
 CTTCCAGCACCTCCTGCGACCCCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGGGAAAT
 GCCATGTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTACGGAGGATGCAAGAGGCTGT
 ATGGCTCCGAGGCCTTGCCACTGACTTTCAGGACTCAGCTGCAGCTAACAGCTCATCAACGA
 CTACGTGAAGAATGGAACTAGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACAA
 ATGATGGCCTGGTAATTACATCTTAAAGCAAATGGGAGATGCCCTTGACCCCTTAAG
 ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGTAATGGTGCCATGATGAGTT
 GCATCACCTGACTATACTTACTTCCGGACGAGGAGCTGCTGCACCGTGGAGCTGAAG
 TACACAGGCAATGCCAGCGCACTCTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGGAAAG
 CCATGCTGCTCCAGAGACCCCTGAAGCGGTGGAGAGACTCTGGAGTTCAGAGAGATAAGGTGA
 GCTCTACCTGCCAAAGTTCCATCTCGAGGGACTATAACCTGAACGACATACTTCTCAGCTG
 GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG
 CAGTCTCCAGGTGGTCCATAAGGCTGTGATGTATTGAGGAGGGCACAGAACGATCTGC
 TGCCACC CGGGTCAAAATCATGACAAGATCTAACGCACTGGAGACGCGTACCATGTGCGTTTC
 AACAGGCCCTCCTGATGATCATTGTCCTACAGACACCCAGAACATCTTCTCATGAGCAAAG
 TCACCAATCCCAAGCAAGCCTAA

Protein Sequence ACT variant : MD 61**SEQ ID N°10**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF
 SPLSISTALAFSLGAHNTLTEILKGLKFNLTELSEAEIHQSFQHLLRTLNQSSDELQLSMGN
 AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAKKLINDYVKNGTRGKITDLIKDLDQQT
 MMVLVNYIFFKAKWEMPFDQDTHQSFRYLSKKWVMVPMMMSLHHTIPYFRDEELSCTVVELK
 YTGNASALFILPDQDKMEEVEAMLLPETLKWRDLSLEFREIGELYLPKFSISRDYNLNDILLQL
 GIEEAFTSKADLSGITGARNLAWSQVVHKAVLDVFEEGTEASAATAVKIMTRSNAVETRTIVRF
 NRPFLMIIVPTDTQNIFFMSKVTPNPKQA*

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FIG. 7F

Italic : start codon ATG

Bold : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

DNA Sequence ACT variants : MD 518**SEQ ID N°11**

ATGAGAGGATCCCATCACCATCACCATCACCTAGACACCCATAACAGCCCACTGACGAGGAGA
 ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT
 GGACTTCGCTTTCAGCCTGTACAAGCAGTTAGCCTGAAGGCCCTGATAAGAATGTCATCTTC
 TCCCCACTGAGCATCTCCACCGCCTGGCCTCTGTCTCTGGGGGCCATAATACCACCTGA
 CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTACCA
 CAGAGCTTCCAGCACCTCCTGCGCACCCCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGG
 GCCATGTTGTCAAAGAGCAACTCAGTCTGGACAGGTTACGGAGGATGCCAAGAGGGCTGT
 ATGGCTCCGAGGCCTTGCCACTGACTTTCAGGACTCAGCTGCAGCTAAGAACGCTCATCACGA
 CTACGTGAAGAATGGAACTAGGGGAAAATCACAGATCTGATCAAGGACCTTGACTCGCAGACA
 ATGATGGTCCTGGTGAATTACATCTTAAAGCCAAATGGGAGATGCCCTTGACCCCCAAG
 ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAAGTGGGTAATGGTGCCATGATGAGTT
 GCATCACCTGACTATACTTACTTCCGGACGAGGAGCTGTCTGCACCGTGGAGCTGAAG
 TACACAGGCAATGCCAGCGCACTCTTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGG
 CCATGCTGCTCCAGAGACCCCTGAAGCGGTGGAGAGACTCTGGAGTTCAGAGAGATAGGTGA
 GCTCTACCTGCCAAAGTTCCATCTCGAGGGACTATAACCTGAACGACATACTCTCAGCTG
 GGCAATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGCCAGGAACCTAG
 CAGTCTCCAGGTGGTCCATAAGGCTGTGCTGATGTATTGAGGAGGGCACAGAACGATCTGC
 TGCCACCGCGGTCAAAATCACCGAGCGTGTCTCGCCCGTGGAGACGCGTACCAATTGTGCG
 AACAGGCCCTCCTGATGATCATTGTCCTACAGACACCCAGAACATCTCTTATGAGCAAAG
 TCACCAATCCCAAGCAAGCCTAA

Protein Sequence ACT variants: MD 518**SEQ ID N°12**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKNVIF
 SPLSISTALAFSLGAHNTTLTEILKGLKFNLTETSEAEIHQS FQHLLRTLNQSSDELQLSMGN
 AMFVKEQLSLLDRFTEDAKRLYGSEAFATDFQDSAAKKLINDYVKNGTRGKITDLDLSQT
 MMVLVNYIFFKAKWEMPFDQDTHQSRFYLSKKWVMVPMMSLHHLTI PYFRDEELSCTVVELK
 YTGNASALFILPDQDKMEEVEAMLLPETLKRWRDSLEFREIGELYLPKFSISRDYNLNDILLQL
 GIEEAFTSKADLSGITGARNLAVSQVVKAVLDVFEEGTEASAATAVKITERVSPVETRTIVRF
 NRPFLMIIVPTDTQNIFFMSKVTPNPKQA*

FIG. 7G

Italic : start codon ATG

Bold : His-tag

Underlined : DNA sequence different to ACTwt sequence

Underlined and grey : DNA sequence encoding RSL mutation.

DNA Sequence ACT variants : MDCI**SEQ ID N°13**

ATGAGAGGATCCCATCACCATCACCATCTAGACACCCTAACAGCCCACTGACGAGGAGA
 ATCTGACCCAGGAGAACCAAGACCGAGGGACACACGTGGACCTCGGATTAGCCTCCGCCAACGT
 GGACTTCGCTTCAAGCCTGTACAAGCAGTTAGTCTGAAGGCCCTGATAAGAATGTCATCTTC
 TCCCCACTGAGCATCTCCACCGCCTGGCCTTCCTGTCTGGGGGCCATAATACCACCTGAG
 CAGAGATTCTCAAAGGCCTCAAGTTCAACCTCACGGAGACTTCTGAGGCAGAAATTACCA
 CAGAG CTTCCAGCACCTCCTGCGACCCCTCAATCAGTCCAGCGATGAGCTGCAGCTGAGTATGG
 GAAATGCCATGTTGTCAAAGAGCAACTCAGTCTGCTGGACAGGTTACGGAGGATGCCAAGAGGCTGT
 ATGGCTCCGAGGCCTTGCCACTGACTTTCAAGGACTCAGCTGCAGCTAACAGCTCATCACGA
 CTACGTGAAGAATGGAACTAGGGGGAAAATCACAGATCTGATCAAGGACCTGACTCGCAGACA
 ATGATGGTCTGGTAATTACATCTCTTAAAGCCAATGGGAGATGCCCTTGACCCCCAAG
 ATACTCATCAGTCAAGGTTCTACTTGAGCAAGAAAAGTGGTAATGGTGCCTATGATGAGTT
 GCATCACCTGACTATACCTTACTTCCGGGACGAGGAGCTGTCTGCACCGTGGAGCTGAAG
 TACACAGGCAATGCCAGCGCACTCTCATCCTCCCTGATCAAGACAAGATGGAGGAAGTGG
 AGCCATGCTGCTCCCAGAGACCCCTGAAGCGGTGGAGAGACTCTGGAGTTCAGAGAGATAGGTGA
 GCTCTACCTGCCAAAGTTTCCATCTCGAGGGACTATAACCTGAACGACATACTTCTCAGCTG
 GGCATTGAGGAAGCCTTCACCAGCAAGGCTGACCTGTCAGGGATCACAGGGGCCAGGAACCTAG
 CAGTCTCCAGGTGGTCCATAAGGCTGTGCTGATGTATTGAGGAGGGCACAGAACGATCTGC
 TGCCACCGCGGTCAAAATCACCTTTAGATCTGCATTAGTGGAGACCGTACCATTGTGCGTT
 AACAGGCCCTCCTGATGATCATTGTCCTACAGACACCCAGAACATCTTCTCATGAGCAAAG
 TCACCAATCCCAGCAAGCCTAA

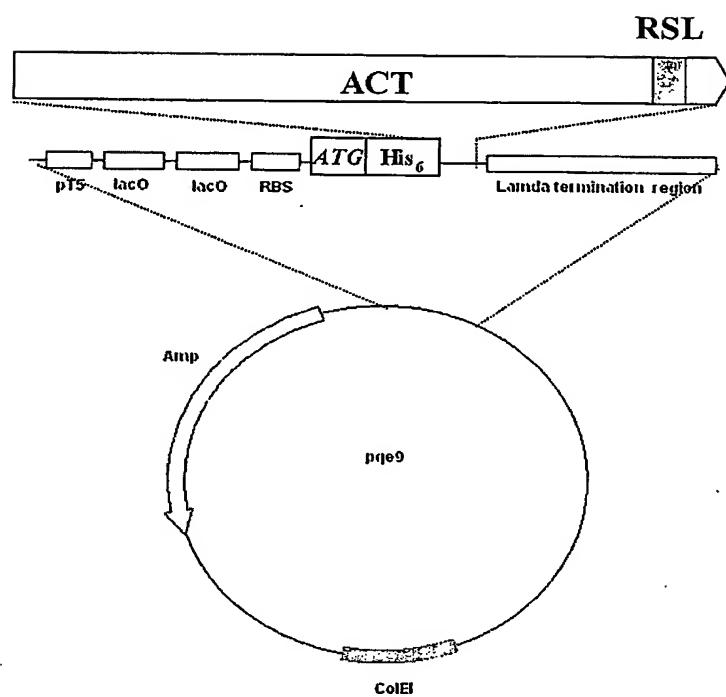
Protein Sequence ACT variants: MD CI**SEQ ID N°14**

MRGSHHHHHHSRHPNSPLDEENLTQENQDRGTHVDLGLASANVDFAFSLYKQLVLKAPDKN
 VIF SPLSISTALAFSLGAHNTTLTEILKGLKFNLTELSEAEIHQS
 FQHLLRTLNQSSDELQLSMGN AMFVKEQLSLLDRFTEDAKRLY
 GSEAFATDFQDSAAKKLINDYVKNGTRGKITD
 LIKDLD
 SQT MMVLVNYIFFKAKWEMPFD
 PQDTHQSRFYLSKKWVMVP
 MMSLHHLTI
 PYFRDEEL
 SCTV
 VELK YTGNASALFILPDQDKMEE
 VEAMLLPETLK
 WRDSLEFREIGE
 LYLPKFSISRDYN
 NLNDILLQL
 GIEEAFTSKADLSGITGARNLAVSQV
 VHKA
 VL
 DV
 FE
 EGTE
 ASA
 A
 TAVKITFRS
 ALVET
 RTIVRF
 NRPFLMIIVPTDTQNIFFMSKV
 TNPKQA*

FIG. 8

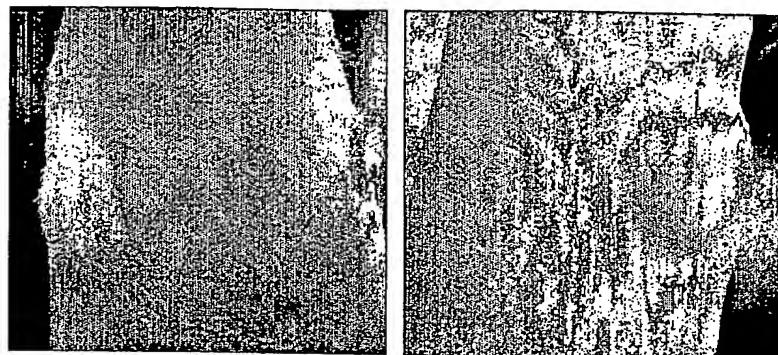
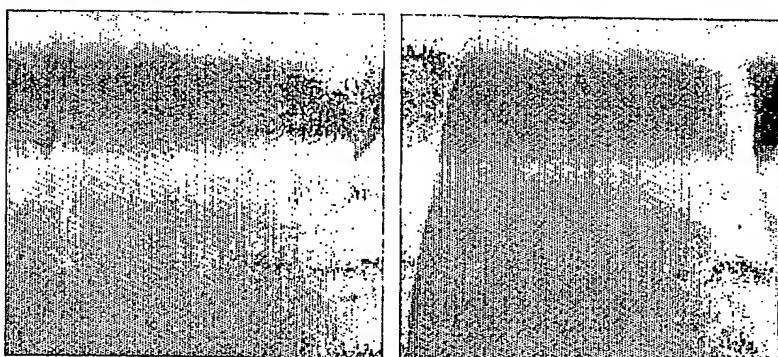
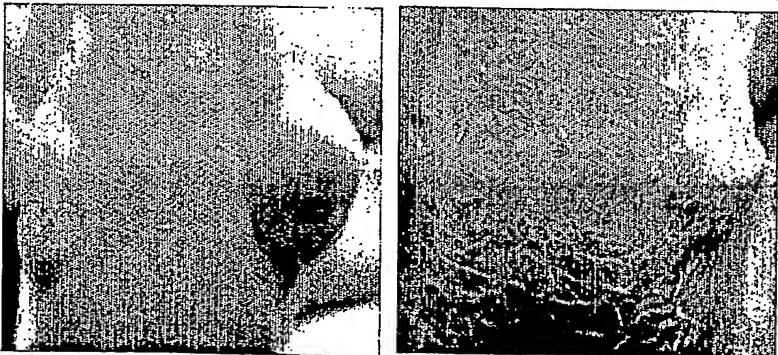
<i>Serpin</i>	<i>Sequences</i>	<i>P6</i>	<i>P5</i>	<i>P4</i>	<i>P3</i>	<i>P2</i>	<i>P1</i>	<i>P'1</i>	<i>P'2</i>	<i>P'3</i>	<i>P'4</i>	<i>P'5</i>
ACT_{WT}	Protein (a.a) SEQ ID N° 15	V	K	I	T	L	L*	S	A	L	V	E
	DNA (codon)	GTC	AAA	ATC	ACC	CTC	CTT	TCT	GCA	TTA	GTG	GAG
MD820	Protein (a.a) SEQ ID N° 16	V	K	I	T	L	R*	S	R	A	V	E
	DNA (codon)	GTC	AAA	ATC	ACC	CTC	<u>CGT</u>	TCT	<u>CGA</u>	<u>GCA</u>	GTG	GAG
MD62	Protein (a.a) SEQ ID N° 17	V	K	I	T	R	R*	S	I	D	V	E
	DNA (codon)	GTC	AAA	ATC	ACC	<u>AGG</u>	<u>AGG</u>	TCT	<u>ATC</u>	<u>GAT</u>	GTG	GAG
MD83	Protein (a.a) SEQ ID N° 18	V	K	I	R	G	R*	S	E	L	V	E
	DNA (codon)	GTC	AAA	ATC	<u>AGG</u>	<u>GGG</u>	<u>AGA</u>	TCT	<u>GAG</u>	TTA	GTG	GAG
MD67	Protein (a.a) SEQ ID N° 19	V	K	I	K	L	R*	I	I	L	V	E
	DNA (codon)	GTC	AAA	ATC	<u>AAG</u>	<u>CTI</u>	<u>AGA</u>	<u>ACA</u>	<u>ACA</u>	TTA	GTG	GAG
MD61	Protein (a.a) SEQ ID N° 20	V	K	I	M	I	R*	S	N	A	V	E
	DNA (codon)	GTC	AAA	ATC	<u>ATG</u>	<u>ACA</u>	<u>AGA</u>	TCT	<u>AAC</u>	<u>GCA</u>	GTG	GAG
MD518	Protein (a.a) SEQ ID N° 21	V	K	I	T	E	R*	V	S	P	V	E
	DNA (codon)	GTC	AAA	ATC	ACC	<u>GAG</u>	<u>CGT</u>	<u>GTC</u>	<u>TCG</u>	<u>CCC</u>	GTG	GAG
MDC1	Protein (a.a) SEQ ID N° 22	V	K	I	T	E	R*	S	A	L	V	E
	DNA (codon)	GTC	AAA	ATC	ACC	<u>TTI</u>	<u>AGA</u>	TCT	GCA	TTA	GTG	GAG

FIG. 9



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FIG. 10 A

Control**ACT-WT (50ug)****MD 62 (25ug)****MD 62 (5ug)**

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FIG. 10 B

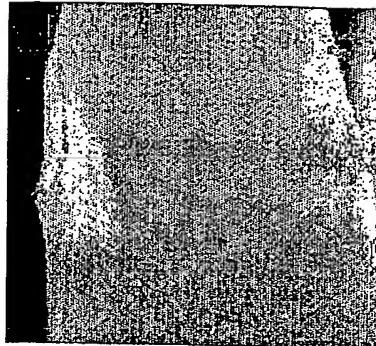
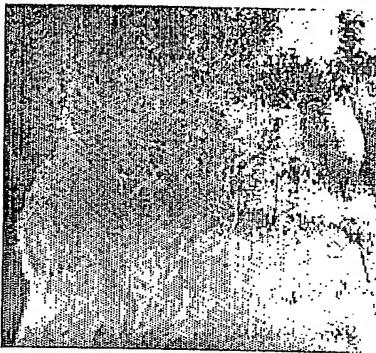
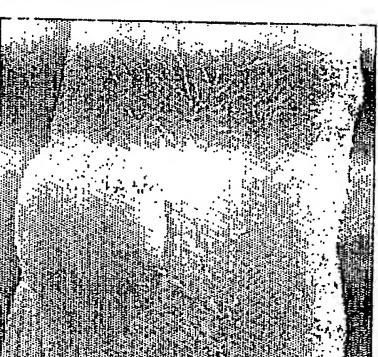
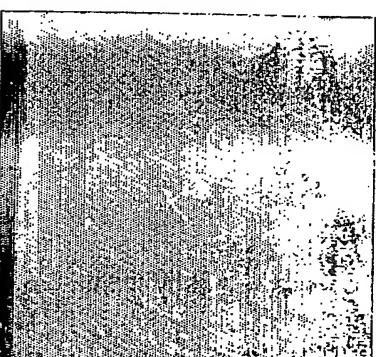
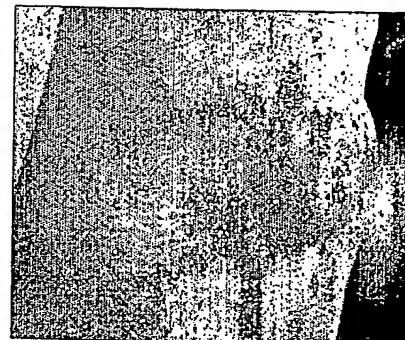
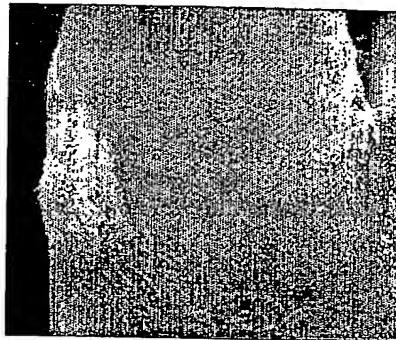
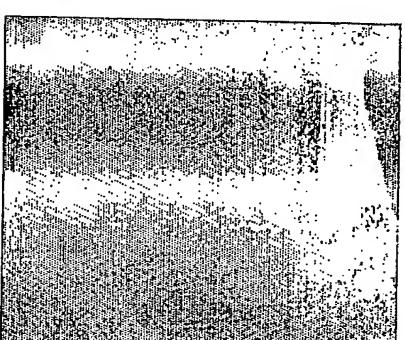
Control**ACT-WT (50ug)****MD 67 (25ug)****MD 67 (5ug)**

FIG. 11

Control**ACT-WT (50ug)****MD CI (50ug)****MD CI (5ug)**